

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-27. (Cancelled)

Claim 28 (new): A photocatalytic composite material comprising a mass of inorganic fibers wherein the surfaces of the individual fibers are coated with a continuous film of photocatalyst formed by vapor deposition and comprising titanium oxide.

Claim 29 (new): The photocatalytic composite material as set forth in claim 28, wherein the inorganic fibers are glass fibers.

Claim 30 (new): The photocatalytic composite material as set forth in claim 28, wherein the mass of fibers is in the form of yarn, woven fabric, nonwoven fabric, or wool.

Claim 31 (new): The photocatalytic composite material as set forth in claim 28, wherein the continuous film comprises crystalline titanium oxide with an average crystallite diameter of 50 nm or smaller.

Claim 32 (new): The photocatalytic composite material as set forth in claim 28, wherein the vapor deposition is performed with titanium tetrachloride.

Claim 33 (new): The photocatalytic composite material as set forth in claim 28, wherein the photocatalyst consists essentially of titanium oxide.

Claim 34 (new): The photocatalytic composite material as set forth in claim 28, wherein the photocatalyst further comprises at least one of silicon oxide, zinc oxide, zirconium oxide, and aluminum oxide, in addition to titanium oxide.

Claim 35 (new): The photocatalytic composite material as set forth in claim 28, wherein the photocatalyst is doped with a transition metal oxide.

Claim 36 (new): The photocatalytic composite material as set forth in claim 28, wherein the substrate or the photocatalytic continuous film is colored.

Claim 37 (new): A process for producing a photocatalytic composite material as set forth in claim 28, the process comprising the steps of contacting a mass of inorganic fibers which has been heated at a temperature of 100-250°C with titanium tetrachloride vapor and water vapor to form a film comprising a titanium oxide precursor on the surfaces of individual fibers, and heating the mass of inorganic fibers in an oxidizing atmosphere to convert the precursor film into a continuous film of a photocatalyst comprising titanium oxide.

Claim 38 (new): The process as set forth in claim 37, wherein the step of heating the mass of inorganic fibers comprises a heating temperature of 250-800°C.

Claim 39 (new): The process as set forth in claim 38, wherein the step of heating the mass of inorganic fibers comprises a heating temperature of 300-600°C.

Claim 40 (new): The process as set forth in claim 37, wherein the titanium tetrachloride vapor and water vapor are previously mixed before contact with the mass of fibers.

Claim 41 (new): The process as set forth in claim 37, wherein the titanium tetrachloride vapor is purified by distillation.

Claim 42 (new): The process as set forth in claim 37, wherein the proportions of the titanium tetrachloride vapor and the water vapor used in the vapor deposition step are such that the H₂O/TiCl₄ molar ratio is in the range of 0.05-4.

Claim 43 (new): The process as set forth in claim 37, wherein each of the titanium tetrachloride vapor and the water vapor is diluted with a dry air or an inert gas to a concentration of 0.1-10%.

Claim 44 (new): The process as set forth in claim 37, wherein the titanium tetrachloride vapor contains vapor of a compound of at least one element selected from the group consisting of silicon, zinc, zirconium and aluminum.

Claim 45 (new): The process as set forth in claim 37, wherein the titanium tetrachloride vapor contains vapor of at least one transition metal compound selected from the group consisting of halides and oxyhalides.

Claim 46 (new): The process as set forth in claim 37, wherein the amount of film formation for each operation in the step of contacting the mass of inorganic fibers in terms of the film thickness is at most 500 nm.

Claim 47 (new): The process as set forth in claim 37, which further includes a step of removing acidic gases and/or titanium compounds generated in the step of contacting the mass of inorganic fibers and/or in the step of heating the mass of inorganic fibers.

Claim 48 (new): The process as set forth in claim 37, wherein the mass of fibers is previously colored with a coloring pigment prior to the vapor deposition step.

Claim 49 (new): The process as set forth in claim 37, which further includes a step of coloring with an inorganic pigment subsequent to the heating step.

Claim 50 (new): A process for producing a photocatalytic composite material, the process comprising the steps of contacting at least a part of an inorganic surface of a substrate which has been heated at a temperature of 100-250°C with titanium tetrachloride vapor and water vapor to form a film comprising a titanium oxide precursor on

the surface, and heating the substrate in an oxidizing atmosphere at a temperature of 300-600°C to convert the precursor film into a continuous film of a photocatalyst comprising crystalline titanium oxide having an average crystallite diameter of 50 nm or smaller.

Claim 51 (new): The process as set forth in claim 50, wherein the titanium tetrachloride vapor and water vapor are previously mixed before contact with the surface of the substrate.

Claim 52 (new): The process as set forth in claim 50, wherein the titanium tetrachloride vapor is purified by distillation.

Claim 53 (new): The process as set forth in claim 50, wherein the proportions of the titanium tetrachloride vapor and the water vapor used in the step of contacting at least a part of an inorganic surface of a substrate are such that the $\text{H}_2\text{O}/\text{TiCl}_4$ molar ratio is in the range of 0.05-4.

Claim 54 (new): The process as set forth in claim 50, wherein each of the titanium tetrachloride vapor and the water vapor is diluted with a dry air or an inert gas to a concentration of 0.1-10%.

Claim 55 (new): The process as set forth in claim 50, wherein the titanium tetrachloride vapor contains vapor of a compound of at least one element selected from the group consisting of silicon, zinc, zirconium and aluminum.

Claim 56 (new): The process as set forth in claim 50, wherein the titanium tetrachloride vapor contains vapor of at least one transition metal compound selected from the group consisting of halides and oxyhalides.

Claim 57 (new): The process as set forth in claim 50, wherein the amount of film formation for each operation in the step of contacting at least a part of an inorganic surface of a substrate in terms of the film thickness is at most 500 nm.

Claim 58 (new): The process as set forth in claim 50, which further includes a step of removing acidic gases and/or titanium compounds generated in the step of contacting at least a part of the inorganic surface of the substrate and/or in the step of heating the substrate.

Claim 59 (new): The process as set forth in claim 50, wherein the substrate is previously colored with a coloring pigment prior to the step of contacting at least a part of the inorganic surface of the substrate.

Claim 60 (new): The process as set forth in claim 50, which further includes a step of coloring the continuous film of photocatalyst with an inorganic pigment subsequent to the step of heating the substrate.

Claim 61 (new): The process as set forth in claim 46, wherein the step of contacting at least a part of the inorganic surface of the substrate and the step of heating the substrate are repeated one or more times.

Claim 62 (new): The process as set forth in claim 57, wherein the step of contacting at least a part of the inorganic surface of the substrate and the step of heating the substrate are repeated one or more times.

Claim 63 (new): A fibrous product having environmental depollution effects comprising a photocatalytic composite material as set forth in claim 28 in which the substrate is a mass of fibers.